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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
KIM, HONG CHONG	
ART UNIT	**PAPER NUMBER**
2186	

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/829,355	SRINIVASAN ET AL.	
	Examiner	Art Unit	
	Hong C Kim	2186	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,42-62,64-84 and 89-100* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-7,16,39,40 and 42-58* is/are allowed.

6)☒ Claim(s) *17-22,29-32,36,59-62,64-66,69,70,73-79,89-93,99 and 100* is/are rejected.

7)☒ Claim(s) *8-15,23-28,33-35,37,38,67,68,71,72,80-84 and 94-98* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

rdh

Detailed Action

1. Claims 1-40, 42-62, 64-84, 89-100 are presented for examination. This office action is in response to the amendment filed on 7/16/04.

Claim Objections

2. Claims 8-15 and 17-20 are objected to because of the following informalities:

Claims 8-15 recites the limitation "the search key" in claim 8 lines 5-9 and claim 10 line 5. There is insufficient antecedent basis for this limitation in the claim. It appears that "means for selectively comparing a search key with data stored in the array groups according to priority" should be added to each claim (see claim 6, old claims 8 and 10 were dependent on claim 6).

Claims 17-20 recites the limitation "the means for storing " in claim 17 line 2. There is insufficient antecedent basis for this limitation in the claim. It appears that "means for storing data in the array groups according to priority" should be added to the base claim 21.

Appropriate correction is required.

Claim Rejections - 35 USC ' 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claims 29-32, 36, 73, 74, are rejected under 35 U.S.C. 102(b) as being anticipated by Feldmeier US Patent No. 5,920,886.

As to claim 29, Feldmeier discloses the invention as claimed. Feldmeier discloses a CAM system including an array of binary CAM cells segmented into a plurality of array groups (Fig. 10B), each array group assigned a priority (col. 7 lines 31-45 and col. 8 lines 8-10), a plurality of group global masks, each for storing a mask pattern indicating priority of a corresponding array group (col. 7 lines 31-45 and col. 8 lines 8-10), and a table (col. 8 lines 8-10, the list) having a plurality of rows, each storing the priority of a corresponding array group.

As to claim 30, Feldmeier further discloses wherein two or more array groups have the same priority (col. 11 line 31 and col. 8 lines 3-5, multiple matching entries reads on this limitation).

As to claim 31, Feldmeier further discloses each array group includes a group global register for storing a global mask pattern indicative of the priority of the array group (col. 7 lines 31-45 and col. 8 lines 8-10).

As to claim 32, Feldmeier further discloses means for selectively storing a search key with data stored in the array groups according to priority to generate a highest priority match index (Fig. 10B).

As to claim 36, Feldmeier further discloses means for comparing a search key with data storing the array groups according to priority (Fig. 10B).

As to claim 73, Feldmeier discloses a CAM comprising: a plurality of CAM array groups (Fig. 10B) and means for assigning a first priority to a first and second of the CAM array groups (col. 8 lines 24+, multiple matching reads on this limitation) and assigning a second priority to a third of the CAM array groups wherein the first and second priorities are different and wherein the third Cam array group occupies an address space numerically between address spaces occupied by the first and second CAM array groups (Fig. 6B, entry 1 is between entry 0,2,3 and col. 8 lines 44+) .

As to claim 74, Feldmeier further discloses means for storing data in the CAM array groups according to priority (col. 14 lines 32-34).

4. Alternatively claims 29-32, 36, 73, 74, are rejected under 35 U.S.C. 102(e) as being anticipated by Ross et al. (Ross) US Patent No. 6,389,506.

As to claim 29, Ross discloses the invention as claimed. Ross discloses a CAM system including an array of binary CAM cells segmented into a plurality of array groups (abstract), each array group assigned a priority (abstract mask), a plurality of group global masks, each for storing a mask pattern indicating priority of a corresponding array group (abstract, mask) and a table having a plurality of rows, each storing the priority of a corresponding array group (abstract).

As to claim 30, Ross further discloses wherein two or more array groups have the same priority (col.3 line 25 one or more matching entries reads on this limitation).

As to claim 31, Ross further discloses each array group includes a group global register for storing a global mask pattern indicative of the priority of the array group (abstract).

As to claim 32, Ross further discloses means for selectively storing a search key with data stored in the array groups according to priority to generate a highest priority match index (abstract and Fig. 3).

As to claim 36, Ross further discloses means for comparing a search key with data storing the array groups according to priority (abstract).

As to claim 73, Ross discloses a CAM comprising: a plurality of CAM array groups (abstract) and means for assigning a first priority to a first and second of the CAM array groups (col.3 line 25 one or more matching entries reads on this limitation) and assigning a second priority to a third of the CAM array groups wherein the first and second priorities are different and wherein the third Cam array group occupies an address space numerically between address spaces occupied by the first and second CAM array groups (abstract and col.3 line 25 one or more matching entries reads on this limitation).

As to claim 74, Ross further discloses means for storing data in the CAM array groups according to priority (abstract, mask).

Claim Rejections - 35 USC ' 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 17-22, 59, 60-62, 64-66, 69, 70, 75-79, 89-93 and 99-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldmeier US Patent No. 5,920,886 or Ross et al. (Ross) US Patent No. 6,389,506 in view of Feldmeier et al. ('414) US Patent No. 6,289,414.

As to claim 21, Feldmeier discloses the invention as claimed. Feldmeier discloses a CAM system comprising an array of binary CAM cells segmented into a plurality of array groups (Fig. 10A), each array group having a group global mask for storing a mask pattern indicating priority of the array group (col. 7 lines 31-45 and col. 8 lines 8-10).

Alternatively, Ross discloses a CAM system including an array of binary CAM cells segmented into a plurality of array groups (abstract), each array group having a group global mask for storing a mask pattern indicating priority of the array group (abstract, mask).

However, neither Feldmeier nor Ross specifically discloses an index circuit to generate a next free address (NFA) for the data according to its priority. '414 discloses an index circuit to generate a next free address (NFA) for the data according to its priority (col. 9 lines 25-27) for the purpose of providing advantage of indicating the next address to place an entry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate an index circuit to generate a next free address (NFA) for the data according to its priority of 414 in the teaching of Feldmeier Or Ross thereby results in an invention as claimed.

As to claim 17, '414 further discloses a next free address (col. 9 lines 25-27).

As to claim 18, Feldmeier further discloses an address decoder (col. 11 lines 36-58).

As to claim 19, '414 further discloses an NFA table (col. 9 lines 25-27).

As to claim 20, '414 further discloses empty bit (col. 2 lines 53-57).

As to claim 22, '414 further discloses valid bits (col. 2 lines 53-57). Feldmeier further discloses a priority encoder (Fig. 10B Ref. 1060).

As to claim 59, '414 further discloses valid bits (col. 2 lines 53-57).

As to claim 60, Feldmeier discloses a CAM comprising: plurality of CAM array groups each including a plurality of rows of binary CAM cells (Fig. 10B) and a plurality of group global mask circuits each coupled to a corresponding one of the CAM array groups, wherein each group global mask indicates a priority of the corresponding CAM cells relative to other CAM cells (col. 7 lines 31-45 and col. 8 lines 8-10).

Alternatively, Ross discloses a CAM comprising: plurality of CAM array groups each including a plurality of rows of binary CAM cells (abstract) and a plurality of group global mask circuits each coupled to a corresponding one of the CAM array groups, wherein each group global mask indicates a priority of the corresponding CAM cells relative to other CAM cells (abstract).

However, neither Feldmeier nor Ross specifically discloses plurality of mask valid bits, each indicating whether a valid global mask is stored in a corresponding group global mask circuit. '414 discloses plurality of mask valid bits, each indicating whether a valid global mask is stored in a corresponding group global mask circuit (col. 2 lines 53-57) for the purpose of providing advantage of indicating the status of entry thereby preventing an error or saving access time by reading or writing only the status bits instead of entire line.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate plurality of mask valid bits, each indicating whether a valid global mask is stored in a corresponding group global mask circuit of 414 in the teaching of Feldmeier Or Ross thereby results in an invention as claimed.

As to claim 61, Feldmeier further discloses the priority assigned to each CAM array group is unrelated to the CAM array group's location relative to other CAM array groups (col. 7 lines 31-45 and col. 8 lines 8-10, multiple match reads on this limitation). Ross further discloses the priority assigned to each CAM array group is unrelated to the CAM array group=s location relative to other CAM array groups (col.3 line 25 one or more matching entries reads on this limitation).

As to claim 62, '414 further discloses valid bits (col. 2 lines 53-57).

As to claim 64, '414 further discloses a CIDR address (col. 6 lines 9+ and col. 9 lines 8-27).

As to claim 65, '414 further discloses an index circuit to generate a next free address (col. 9 lines 25-27).

As to claim 66, Feldmeier further discloses a select circuit and a priority encoder (Fig. 10B).

As to claim 69, '414 further discloses an index circuit to generate a next free address (col. 9 lines 25-27).

As to claim 70, Feldmeier further discloses a select circuit and a priority encoder (Fig. 10B).

As to claims 75, 77, and 79, '414 further discloses an index circuit to generate a next free address (col. 9 lines 25-27).

As to claim 76, Feldmeier further discloses an address decoder (col. 11 lines 36-58).

As to claim 78, '414 further discloses empty bit (col. 2 lines 53-57).

As to claim 89, Feldmeier discloses a CAM comprising: plurality of CAM array groups each array group including a plurality of rows of binary CAM cells (Fig. 10B, col. 7 lines 31-45 and col. 8 lines 8-10).

Alternatively, Ross discloses a CAM comprising: plurality of CAM array groups each including a plurality of rows of binary CAM cells (abstract).

However, neither Feldmeier nor Ross specifically discloses plurality of mask valid bits, each indicating whether a valid global mask is stored in a corresponding group global mask circuit. '414 discloses plurality of mask valid bits, each indicating whether a valid global mask is stored in a corresponding group global mask circuit (col. 2 lines 53-57) for the purpose of providing advantage of indicating the status of entry thereby preventing an error or saving access time by reading or writing only the status bits instead of entire line.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate plurality of mask valid bits, each indicating whether a valid global mask is stored in a corresponding group global mask circuit of 414 in the teaching of Feldmeier Or Ross thereby results in an invention as claimed.

Also neither Feldmeier nor Ross specifically discloses an index circuit to generate a next free address (NFA) for the data according to its priority. '414 discloses an index circuit to generate a next free address (NFA) for the data according to its

priority (col. 9 lines 25-27) for the purpose of providing advantage of indicating the next address to place an entry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate an index circuit to generate a next free address (NFA) for the data according to its priority of 414 in the teaching of Feldmeier or Ross thereby results in an invention as claimed.

As to claim 90, Feldmeier further discloses the priority assigned to each CAM array group is unrelated to the CAM array group's location relative to other CAM array groups (col. 7 lines 31-45 and col. 8 lines 8-10, multiple match reads on this limitation). Ross further discloses the priority assigned to each CAM array group is unrelated to the CAM array group's location relative to other CAM array groups (col.3 line 25 one or more matching entries reads on this limitation).

As to claim 91, Feldmeier further discloses a group priority encoder (Fig. 10B).

As to claim 92, Feldmeier further discloses storing the priority for each array group in a priority table (col. 8 lines 8-10, the list).

As to claim 93, '414 further discloses valid bits (col. 2 lines 53-57).

As to claim 99, Feldmeier discloses a method for a CAM having a number of array groups, each array group including a plurality of rows of CAM cells (Fig. 10B, col. 7 lines 31-45 and col. 8 lines 8-10) and array group assigning a priority (Fig. 10B and col. 8 lines 8-10, the list).

Alternatively, Ross discloses a method for a CAM having a number of array groups, each array group including a plurality of rows of CAM (abstract).

However, neither Feldmeier nor Ross specifically discloses a number of mask valid bits, each indicating whether a corresponding array group is assigned a priority. '414 discloses a number of mask valid bits (col. 2 lines 53-57), each indicating whether a corresponding array group is assigned a priority (col. 2 lines 36-37) for the purpose of providing advantage of indicating the status of entry thereby preventing an error or saving access time by reading or writing only the status bits instead of entire line.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a number of mask valid bits, each indicating whether a corresponding array group is assigned a priority of 414 in the teaching of Feldmeier or Ross thereby results in an invention as claimed.

Also neither Feldmeier nor Ross specifically discloses generating a next free address (NFA). '414 discloses generating a next free address (NFA) (col. 9 lines 25-27) for the purpose of providing advantage of indicating the next address to place an entry.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate generating a next free address (NFA) of 414 in the teaching of Feldmeier or Ross thereby results in an invention as claimed.

As to claim 100, Feldmeier further discloses the mask valid bits are combined in a priority encoder (col. 8 lines 8-10).

Allowable Subject Matter

6. Claims 1-7, 16, 58, 39-40, and 42-57 are allowed.

7. Claims 8-15 would be allowable if rewritten or amended to overcome the objection(s), set forth in this Office action.

8. Claims 23-28, 33-35, 37-38, 67-68, 71-72, 80-84, and 94-98 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Amendment

9. Applicant's arguments filed on 7/16/04 have been fully considered but they are not deemed to be persuasive.

Applicant's remarks that the references not teaching a group global mask is not considered persuasive. Feldmeier discloses a group global mask (col. 7 lines 32+, each entry having a priority mask reads on this limitation). Ross also discloses a group

global mask (abstract). Therefore broadly written claims are disclosed by the references cited.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached PTO-892.

THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. ' 1.111(c).

When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong C Kim whose telephone number is 703-305-3835. The examiner can normally be reached on M-F 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt M Kim can be reached on (703) 305-3821.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
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or faxed to TC-2100:
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HK
Primary Patent Examiner
October 3, 2004